

# Inheritance And Reconstruction of Modern Tempera Painting

Yixin Lu

School of Art, Southeast University, Jiangsu, China

\* Corresponding Author Email: 220224165@seu.edu.cn

**Abstract.** Tempera painting, as a classical Western painting material technique, has experienced more than a thousand years of fluctuation in the long river of painting. Due to the rapid development of the times, social and technological progress, changes in people's aesthetic concepts, and other factors, tempera painting has gradually entered into a new process, more adapted to the development of the new era and people's spiritual needs. This paper uses literature research method, case study method, summary method to systematically sort out the development and evolution of the system of Tanbera painting techniques in painting creation, focusing on the evolution and development of traditional materials and techniques, media, aesthetics and other aspects of modern Tanbera painting under the trend of diversification of art, enriching the Tanbera painting in the modern traditional techniques and the comprehensive use of new materials, and thus laying a foundation for the contemporary inheritance of Tanbera painting. It provides a theoretical background for the contemporary inheritance and innovative practice of tempera painting so that the ancient art of tempera painting can continue to be inherited and developed under the wave of the new era.

**Keywords:** Tempera painting; material techniques; aesthetics; pluralism; reconstruction.

## 1. Introduction

In the long history of art, every art form is constantly changing and alternating, so the acceptance of different times and cultures, as well as the re-examination, reorganization, and reconstruction of one's own tradition, is very important [1]. Tempera painting, as the predecessor of oil painting, has a long history. This ancient technique has not only survived the passage of time but has been revitalized with the development of the times. It has formed a distinctive material technique and painting language, which contemporary artists have steadily emphasized and explored. To broaden the innovation and modernity of contemporary Tempera painting, it should carefully study its techniques and inherit, learn from, and explore the contemporary value of Tempera with the vision of continuous development. Therefore, this study focuses on the contemporary development trend of modern Tempera painting and investigates the inheritance, change, and innovation of Tempera painting techniques in the contemporary context. This study aims to systematically and comprehensively sort out the development history of tempera painting by searching and reading relevant information and literature through the literature research method; at the same time, it uses the case study method and the inductive summary and comparison method to reveal the innovation and multi-dimensional application of tempera materials and techniques under the influence of contemporary science and technology and social development and aims to combine tempera techniques with modern painting media, techniques, language, concepts and aesthetics to achieve the purpose of expanding this traditional painting technique into richer forms of artistic expression and aesthetic spirit. The research aims to combine tempera techniques with modern painting media, techniques, language, concepts, and aesthetics to expand this traditional painting technique into a richer form of artistic expression and aesthetic spirit; it not only helps art creators and viewers to pay in-depth attention to the development of painting art and understand the language of classical painting but also allows art creators to follow the times and penetrate the essence of tempera painting to tap its endless creative inspiration and source.

## 2. The Origin and Development of Temperance

### 2.1. Emergence

The term 'Tempera' originates from the Italian word which means 'to mix'. It generally denotes paintings produced by blending pigments and an emulsified binder, like an egg, and encompasses all paintings that contain water-soluble gelatinous pigments and binders. The fundamental elements of tempera paintings, namely pigments and mixing agents, have existed in cave wall paintings since ancient times. Primitive humans applied pigments made from animal fat, bone marrow, blood, iron ore, clay, charcoal, and other mineral materials to damp limestone surfaces or cave roofs using stone tools [1]. The pigments were ground into a powder and directly applied. For example, evidence of emulsion and colorant painting has been discovered in the Altamira cave murals, which are believed to be around 17,000 years old. In ancient Rome and ancient Egypt, painting materials compared with ancient times have made great progress, pigment materials are more abundant, and the mixing agent is also made from animal fat in egg yolk, egg white or milk, or egg and glue made from gelatin pigment. In the first century BC, portraits of the dead painted on mummies with a combination of wax and tempera were found in ancient Greece and ancient Egypt - the Fayum portraits (Fig. 1), which were used as portraits of the dead embedded in mummies as a substitute for mummy masks, a custom that continued until the 4th century AD. Fayum portraits are typically created on a wooden base using wax as a blending agent [2]. During the early period, hot wax was used predominantly in creating these portraits. As time progressed and material innovation occurred, wax emulsions were employed instead to create an effect comparable to that of oil paintings. Wax paintings on wood panels are durable and retain their vibrant colors in both wet and dry climates. As a result, they have survived without damage in underground tombs to this day. Tempera paintings became popular for frescoes in tombs around 3,100 BC. During the Roman period, the Romans commonly used frescoes to decorate both the interior and exterior of buildings. The most common method of painting frescoes was the Tempera technique, using a combination of glue, wax, and Tempera, and the Romans also employed organic substances such as egg yolks, egg whites, or milk pulp as a blending agent, following the steps of applying plaster on the wall, outlining the outline on the plaster, and finally depicting the colors on top of it.



**Fig. 1** Portrait of Fayoum [3]

## 2.2. Period of Development

The Middle Ages were an important period in the development of tempera painting. Christianity played a very important role in the social life of the Middle Ages, and the art of painting existed for religion and was imbued with the spirit of Christianity, so the art of this period appeared mainly in everyday life as book illustrations, church altarpieces, and icon painting. These icon paintings often need to be preserved for a long time, and the tempera technique, which uses a mixture of waxes, glues, proteins, and mineral pigments painted on wood panels, is not afraid of humidity and does not dissolve in water, so it is not easily cracked and peeled off and has therefore become the most widely used form of painting for religious subjects and icon paintings. Under the influence of religious theology, medieval painting became very homogeneous in terms of form compared to the ancient Greek and Roman periods, and tempera painting began to mature technically, but the form of the art also tended to be abnormally flat and formulaic [4]. For example, there is no focal perspective to represent the real shapes of the material world, and simple colors are used; the basic color of the faces of the figures must usually be in antique copper green, and when the Madonna's mantle is depicted, it must be in bluish chalcopyrite or ultramarine to express the purity and grandeur of the Virgin Mary. The combination of the tempera technique and the gold leaf technique makes the tempera paintings glow with brilliant hues and luster, and the thick and delicate texture of the painting and the golden light complement each other, adding to the heavenly effect of the church interior and recreating people's imagination of religious sanctity (Fig. 2).



Fig. 2 Vladimir's Madonna [5]

## 2.3. The Heyday

In the late Middle Ages, the progress of productive forces gradually freed people from the theological constraints of Christianity, and with the advent of the Renaissance in Europe, humanist thought and aesthetics developed in an unprecedented way. The art of this period no longer fled and avoided real life but approached it and drew nourishment from it. In the early Renaissance, the Florentine painter Chemabue spread this water-based tempera technique to Italy, and then Giotto, Masaccio and other painters in the inheritance of the ancient Greek and Roman art tradition on the basis of the spirit of humanism given to the arts, broke through the art of the medieval era of the flatness and stereotypical nature of art, abandoned the Pompeii art of decorative painting as the head

of design styles, to give the traditional rigidity of buildings and figures more natural and realistic three-dimensionality to the traditional rigid buildings and figures [4].

In the 15th century, the works of the famous Italian painter Botticelli broke the rules and were no longer limited to religious themes. Many of his works were based on ancient mythological stories as well as literary and poetic works, and the classic painting *The Birth of Venus* powerfully breaks with religious asceticism and embodies progressive humanist sentiments (Fig. 3). In the mid to late Italian Renaissance, painters realized that the previous water-based tempera had many shortcomings, such as imperfect compositions, fast drying emulsions, insufficiently vibrant colors and inconvenient mixing of colors, resulting in tempera paintings that lacked vividness and softness. Many painters began experimenting with oil-based blends to improve the Tempera material, boldly reforming traditional painting materials, actively seeking new materials for the medium, and applying this whole range of Tempera techniques to dry and wet painting. Until the beginning of the 15th century, the Netherlandish painter Jan van Eyck summed up the experience of his predecessors and added oil and resin components to the latex-soluble painting materials, so that the water-based tempera combined with the dry oil medium to form a hybrid technique, thus changing the drawbacks of the traditional tempera painting method [6]. The basic technique is still to use tempera as a base and then combined with the mixed technique of transparent overpainting with oil, the two different materials are superimposed, layer by layer, which greatly enhances the real sense of pictorial space of the object. The hybrid technique combines the advantages of both water-based and oil-based materials, and the images produced by this technique have a unique optical effect created by the superimposition of translucent layers of colour, resulting in a glossy, glazed sheen to the image.



**Fig. 3** The Birth of Venus [7]

### **3. Inheritance and Reconstruction of Modern Tempera Painting**

As the composition of tempera changed from water-based to oil-based, and with the development of mixed techniques, oil painting gradually became the dominant form of painting in Europe, replacing tempera. With the continuous development of new industrial technologies in society, the vast majority of painters have turned to the exploration of new art forms such as oil painting and photography, but this does not mean that the ancient craft of tempera painting will disappear with the passing of time. After two or three hundred years of silence, at the end of the 14th century, Chenino Chinini's book "Artist's Manual" was compiled and published, this traditional painting technique reappeared in people's eyes, people again recognized its unique artistic value, marveled at its

wonderful artistic charm at the same time, many painters began to pay attention to the inheritance of technical materials and innovation of tempera painting, and explored the development path in the era of tempera painting. development path in the era of tempera painting [6]. In the East, Tempera also gained a unique influence. in the mid to late 1980s, scholars from the *École Supérieure des Beaux-Arts* in Paris, France, visited China and also brought with them traditional Western material techniques. Among them, tempera has attracted many Chinese artists because of the uniqueness of its technique and the special beauty of its images, and painters have begun to try to use tempera, an ancient painting language, to express their own spiritual aspirations. In the 1990s, Zhang Yuan, Liu Kongxi, Li Xiaogang, and other painters also went to Europe and Japan for the systematic study of tempera painting, and not only did they make outstanding achievements in the practice of tempera painting, but also opened up new channels for the development of tempera painting in China and the contemporary era by carrying out relevant creation, research, and teaching after returning to their home countries [8]. In conclusion, in the recent contemporary context, artists from East and West, while inheriting the traditional technique of Tempera, continue to make breakthroughs and innovations in various dimensions, so that Tempera has shone a light that cannot be ignored in today's diverse art forms.

### 3.1. Development of Painting Tools and Materials

With the advancement of science and technology, the development of optics, anatomy, perspective, and other disciplines have greatly promoted the creation of various forms of painting, and painting materials and tools have become more practical and abundant with the development of industrial technology. At the beginning of the 20th century, hardwood panels, the traditional support material for tempera painting, were smooth, workmanlike, sturdy, and capable of supporting a gesso base of a certain thickness. However, with the development of modern industrial technology, synthetic multilayer plywood, density board, and fibreboard can be used in tempera painting, which is less prone to warping, easier to purchase, and more affordable than wood-based materials [9]. Gum is an essential material in tempera painting. Ancient European painters always used animal gums such as rabbit skin glue and fish skin glue as adhesives for tempera paintings due to the limitations of the conditions. Animal glue has the advantage of being reliable, but it has to go through many steps such as soaking, puffing, heating, boiling, keeping warm, etc., which is complicated and not easy to preserve. Modern white latex is of high quality, reliable and easy to obtain, easy to use, which greatly simplifies the process of preparing gums and shortens the production time of tempera boards. In the use of base material, the traditional tempera painting backing should use boiled gypsum powder, but boiled gypsum is difficult to buy, while the big white powder and Lidl powder compared to the boiled gypsum powder to make the backing is not very different, and affordable, easy to buy, is a successful improvement of the base material. Pigments, an important material for tempera painting, have also evolved considerably. The production of pigments has evolved from natural grinding and mixing by hand to mass production in industrial glass bottles, which has greatly facilitated the use of pigments and the creation of paintings and led to significant improvements in the variety of pigments available, their quality and the way in which they are stored and preserved. Nowadays, mineral pigments have also gradually developed into chemical synthetic pigments. Domestic and foreign paint brands have started their own production of finished emulsion media or emulsion-type pigments. For example, the Tempera pigment from the French company Chennellier is made from an oily emulsion of dry oil and resin components as a color powder binder [10]. Before the 20th century, emulsion binders were usually made from eggs, and the presence of water-soluble viscous and oily components in this glue, which dried quickly and solidified as a film when mixed with the pigment, gave tempera paintings their distinctive luster [11]. Later in the 20th century, contemporary artists developed a variety of emulsion binders to extend the use of tempera, resulting in casein tempera. Casein, also known as rennet, is a protein polymer produced when milk is exposed to acid and has adhesive properties. Casein as an emulsion medium can reduce the oiliness and brightness of the pigment itself, and the work will also show a strong sense of granularity, giving people a kind of mottled vintage feeling;

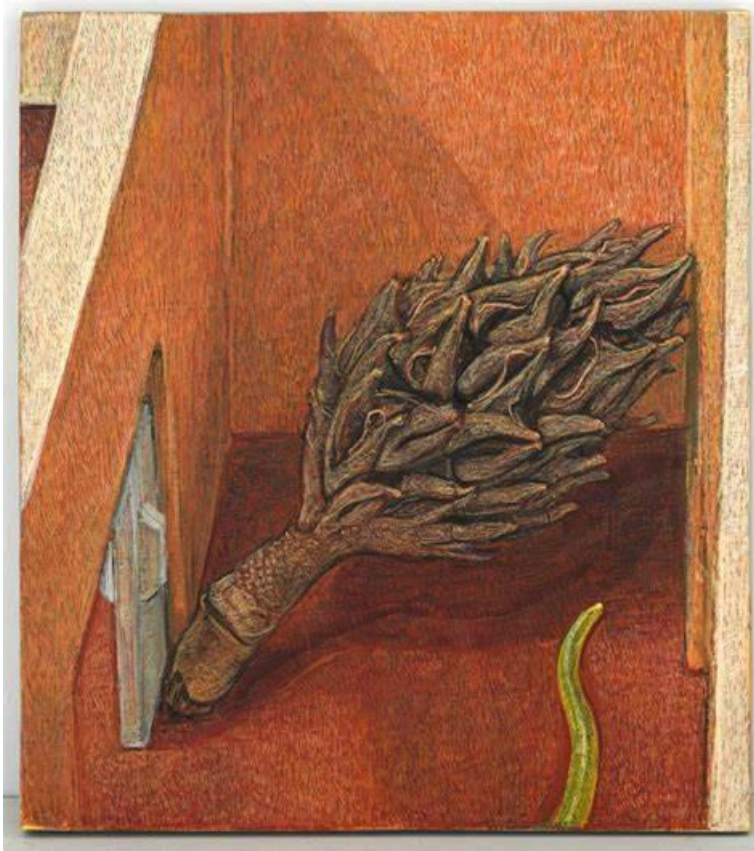
and the work also has good durability, easy preservation, and anti-air oxidation, which is favored by painters [12].

### 3.2. Variety of Materials and Technical Language

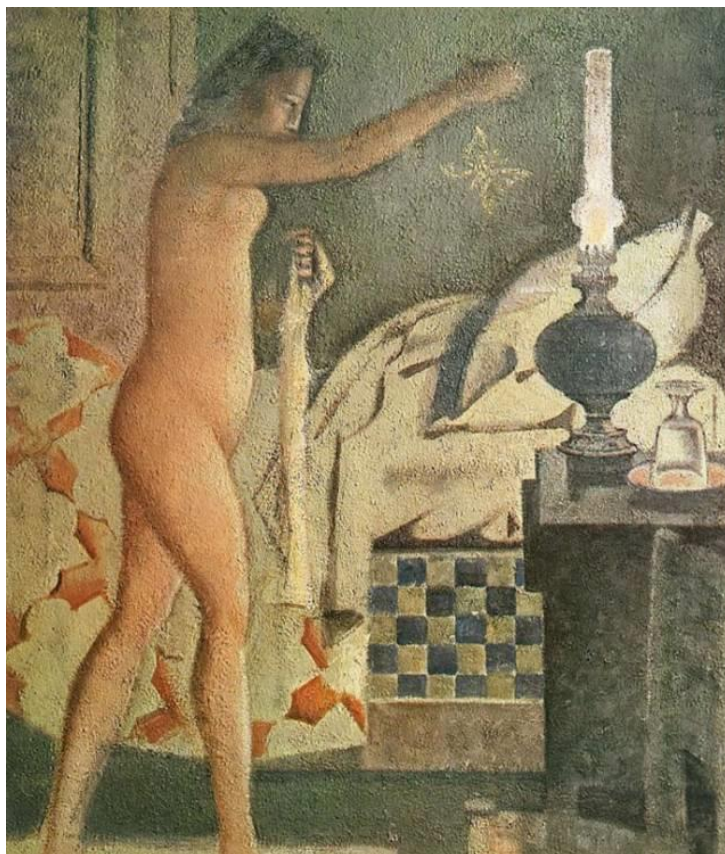
From the end of the 19th century into the 21st, the concept and function of painting began to change. The rise of photography has further enhanced the realism of oil painting, but as people's aesthetic needs continue to change, traditional painting itself has continued to evolve and innovate. With the advent of Impressionism, painting moved from objectivity, realism, and reproduction to subjectivity, abstraction, and expression, and modern painting began to form a diversified pattern. Traditional tempera usually uses the method of sketching lines to achieve the transition of different colors; Renaissance painters such as Botticelli basically use the dense "line method" to paint, the brush strokes are closely connected with each other, and the transition is natural; While modern painters usually use the "stippling method", "short line interlacing method", "point and line combination method" and other ways, such as Andrew Wyeth in the picture usually use short line interlacing method to shape the form, the brushwork is natural and smooth [13]. In addition, the exploration and combination of different materials and techniques in painting form a comprehensive painting with multiple coexisting elements, which enhances the expressive visuality and artistic realism of the works. Artists often use splashing, pressing, scratching, polishing, adding texture, etc. to make their works present a unique artistic language value and charm. For example, The 19th-century Austrian painter Klimt used traditional tempera painting techniques to add gold leaf to create a brilliantly coloured and highly decorative painting (Fig. 4); In the 1980s, Francisco Clemente, an exponent of neo-expressionism, used a variety of materials and media in his works, such as printing, watercolour, oil, wax, linen and other means of artistic creation, and used the technique of overpainting with tempera, layer by layer, to create works on the support of absorbent wall materials, with a certain kind of ineffable, ambiguous and surreal meaning [14]; British painter Anthony Williams was adept at using fine lines to depict the people and landscapes around him. The linear strokes in tempera paintings and the scraping technique of the knives can well express the detailed images of the characters' hair, grasses, and trees, creating a vivid and realistic texture effect (Fig. 5); In his work *Moth* (Fig. 6), Balthus depicts a naked woman imitating the movement of a moth chasing a light in the middle of the night. In this work, he attempts to use casein as a medium to mix with oil paint, boldly rubbing back and forth on the canvas, thus innovating the tempera technique, and the grains of age brought about by the casein medium also give the work a mottled and mysterious atmosphere [15]. The work of American tempera painter Robert Vickery is excellent at creating texture. He is keen to break away from traditional methods of applying paint and find expressions that interest him, creating rich textures on smooth surfaces. In a series of recorded interviews, Robert Vickery describes some of his common painting methods, such as spraying to paint stones and cracks, dotting and rubbing to paint woolen fabrics, and sponging to achieve color transitions and gradations. The method of absorbing paint with a dry cloth or newspaper creates a mottled texture. It is worth noting that the texture of his paintings is not the rough, three-dimensional texture effect achieved by piling pigments on the canvas, but rather he is concerned with restoring the visually realistic texture of the painted objects, giving them a wonderful sense of art while representing reality in the image [13].



**Fig. 4** Works by Klimt the Kiss [16]



**Fig. 5** Works by Anthony Williams [17]



**Fig. 6** The Moth [18]

### 3.3. Transmutation of Aesthetic Concepts

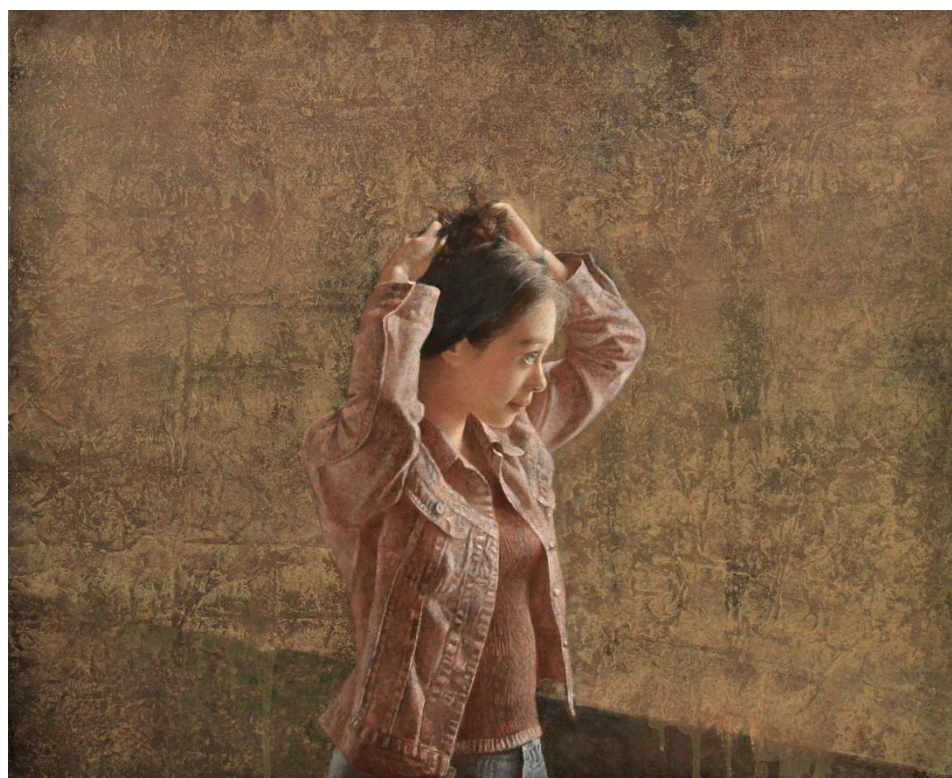
In ancient times, art and witchcraft were inextricably linked. In the face of a harsh environment and irresistible natural disasters, human consciousness gave rise to the earliest religious concepts and the associated practice of witchcraft. In those days, the main purpose of mural art was not to achieve beauty and fulfillment in the spiritual world, but simply to pray for the survival and harvest of the race in conjunction with witchcraft activities. In the Middle Ages, art was a powerful weapon of religion, and tempera paintings were mostly in the service of religion, so they inevitably bore deep religious traces, and the strict painting procedures and methods prevented painters from innovating and changing their painting materials and techniques. The Renaissance, on the other hand, focused on humanist ideas, affirming human rights and opposing theocratic change, as well as influencing the creation of art. In the contemporary period, artists began to focus on personal and realistic themes, human aesthetics tended to diversify, and the concept, function, and connotation of painting changed [10]. In tempera painting, painters also focus on the self-expression of emotions, emphasize the liberation of individuality, and begin to pursue spiritual connotations. Andrew Wyeth was a neo-realist painter who used the fine tempera technique to create a series of paintings of rural life with simple subjects, high modeling ability, and skillful realism; the paintings often contain a quiet atmosphere and nostalgic sentiments, giving tempera painting a new connotation (Fig. 7).

Today, Chinese painters are influenced by Western painting concepts and techniques, while inheriting the essence of the temperament of traditional Chinese culture. By exploring the spiritual nature of painting and researching painting materials, the unique artistic charm and excellent performance of tempera enables contemporary Chinese painters to bring a new essence to ancient Western painting techniques across time and space - the Zen of the East. After the reform and opening up, Chinese oil painter Li Xiaogang was influenced by Andrew Wyeth and began to study Western tempera painting techniques, using Western classical techniques in his paintings to embody Eastern philosophies and moods. For example, the composition, light and shade, and color tones of the images in *Floating*, *Sleeping*, and *Moon* all reveal the Zen stillness and elegance of the Eastern style (Fig. 8).

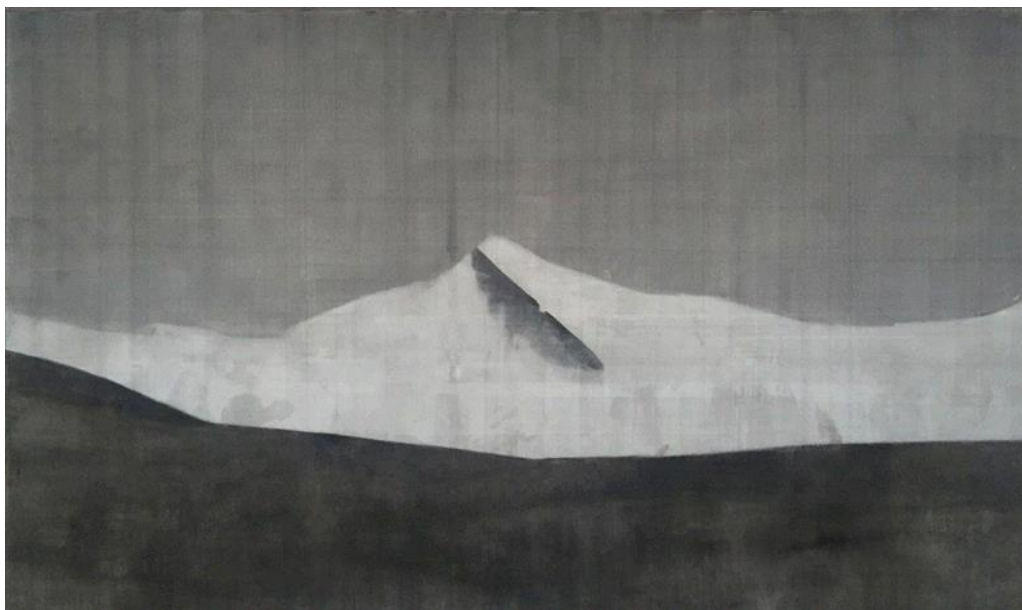
Cao Jigang, a professor at the Central Academy of Fine Arts, left more temporal traces in his landscape works by repeatedly rinsing and polishing them with tempera, and rinsing and soaking them with ink. Cao Jigang's use of tempera contains a kind of Chinese poetic beauty, a perfect fusion of Western techniques and the essence of traditional aesthetics (Fig. 9) [9].



**Fig. 7** The World of Christina [19]



**Fig. 8** Teal Jacket [20]



**Fig. 9** Tranquility [21]

#### **4. The Significance of Innovation in Modern Temperance**

With the progress of society and science, painting techniques are constantly changing to meet the different aesthetic needs of people at different times. The art form will always be like a great flowing river, pushing the waves before it, chasing after what is fresh and life-giving. Tempera, as an ancient and traditional form of painting, has not died out in the rapidly evolving contemporary art environment; on the contrary, its materials and techniques are constantly being updated and developed over time. If can gain a deeper understanding of the nature and composition of tempera, while carefully researching and learning the basics of traditional Western materials and techniques, and on this basis draw on the strengths of modern painting in terms of materials and forms of expression, will be able to break through the limitations of tradition, explore a style of painting that has the spirit of modernity and individuality, and create a new value and space for contemporary tempera art. The process of personal development of tempera painting is in fact a process of continuous understanding, learning, and innovation of the painter's traditional materials, techniques, and concepts of painting; it is a process of continuous adaptation to the changes of the times and the changes in aesthetic concepts. The trend of development of tempera painting fully reflects that its technical forms are developing in the direction of freedom. This freedom greatly facilitates the creation of paintings by painters, enabling them to think from different perspectives and directions and to express their creative intentions, thoughts, and feelings in the most appropriate and effective way, thus demonstrating the artistic charm of tempera paintings. Therefore, tempera painting, as an ancient form of painting, can enter modern painting with a new identity and attitude, and continue and develop well.

#### **5. Conclusion**

To sum up, tempera painting, as the predecessor of oil painting, was once brilliant in the history of Western art and then gradually declined due to the rise of oil painting. However, in different historical periods, there have always been artists who have persevered and inherited such a unique and charming painting technique. The results of this study show that since its entry into the contemporary era, tempera painting has not been limited by traditional techniques and aesthetics but has been continually reinvigorated by the innovative spirit of the artist and the spirit of the age. In addition, the combination of different materials and techniques has injected fresh blood into Tempera. Therefore, people can learn that with the development of the times, tempera painting can either follow

the traditional pattern to express the classical taste or be combined with other painting materials to show the style of the times; at the same time, under the influence of the diversification of modern painting, tempera painting is also moving towards diversification, variety, and multi-faceted development. This study provides many valuable references for future innovative research into the materials, techniques, and aesthetics of tempera painting. Artistic creation is fundamentally inseparable from the needs of the times, and future research should also focus more on the process of the new era to explore the spirit of tempera painting in depth. Therefore, only with the spirit of the times can embody the art of painting in modern times with its own artistic sensibility and create a new relationship with today's industrialized and materialistic world.

## References

- [1] Zhang Chunxin. Techniques of Egg Tempera Painting. Art Techniques, 1997.
- [2] Zhu Boxiong, ed. World Art History (Volume III). Shandong Fine Arts Publishing House, 1989.
- [3] Portrait of Fayoum. <https://art.icity.ly/events/7z255xd>, 2020.
- [4] Tang Kun. Exploring the Material Language of Tempera's Paintings--Taking Botticelli's Works as an Example. Journal of Wuyi College, 2023.
- [5] Vladimir's Madonna. <http://www.video-du-net.fr/peinture/vierge-vladimir.php>, 2023.
- [6] Hao Junling. Towards Freedom: Reflections on the Formal Development of Tempera's Painting Technique. Beijing: Capital Normal University, 2008.
- [7] Sandro Botticelli, Birth of Venus, <https://www.britannica.com/topic/Birth-of-Venus>, 2021.
- [8] Wang Dutao, Liu Kongxi. Study on the Historical Context and Development Process of Tempera Painting in China. Chinese Art, 2021.
- [9] Chen Mingyuan. Ruminating on the contemporary evolution of Tempera painting techniques. Art Education Research, 2019.
- [10] Zhu Yongsi. Research on the contemporary application and interpretation of Tempera materials. Chemical Fibre and Textile Technology, 2021.
- [11] Liu Kongxi. Tempera painting techniques. Anhui Publishing House, 2022.
- [12] Xu Wentao. From water to oil: a look at the development of western painting materials. Journal of Hubei Academy of Fine Arts, 2017.
- [13] Qi Yan. Modern Tempera Painting under Chinese Aesthetics. Art Education Research, 2012.
- [14] Zhang Jing, Li Junfeng. The Value of Composite Materials in Tempera Painting. Beauty and Times (Zhongdian) - Journal of Fine Arts, 2016.
- [15] Yang Guangyan. Analysis and application research of casein tampere material. Papermaking equipment and materials, 2022.
- [16] Klimt. The Kiss. <https://antonfoek.com/gustav-klimt-life-of-an-artist/amp/>, 2023.
- [17] Anthony Williams. <https://antony-williams.com/paintings/>, 2023.
- [18] Balthus. The Moth. [https://www.sohu.com/a/407165674\\_651511](https://www.sohu.com/a/407165674_651511), 2022.
- [19] Andrew Wyeth. The World of Christina. <http://www.sj33.cn/ys/hhys/201012/26406.html>, 2023.
- [20] Li Xiaogang. Teal Jacket. <https://shengxinyuart.com/index/artist/detail?id=MjMy>, 2021.
- [21] Cao Jigang. Tranquility. <https://www.trueart.com/news/215908.html>, 2023.